AMENDMENTS TO THE CLAIMS

This claim listing will replace all prior versions, and listings, of the claims in the application.

Listing of the Claims:

1. (Original) A method for inducing infertility in an animal comprising inhibiting SMC1β expression or activity in said animal.

2. (Original) The method of claim 1, wherein said inhibiting comprises contacting said animal with a nucleic acid selected from the group consisting of a nucleic acid that is an antisense SMC1β nucleic acid and a compound 8 to 80 nucleotides in length targeted to a nucleic acid molecule encoding SMC1β, wherein said compound specifically hybridizes with a nucleic acid molecule of SEQ ID NO: 1 or 3 and inhibits the expression of SMC1β.

3-9. (Canceled)

10. (Original) A method for inducing infertility in an animal, comprising administering to an animal an effective contraceptive amount of an agent that inhibits SMC1β expression or activity.

11. (Original) The method of claim 10 which further comprises restoring fertility to said animal by ceasing administration of said agent.

12. (Original) The method of claim 10, wherein said infertility is caused by blocking spermatogenesis.

13. (Original) The method of claim 12, wherein said spermatogenesis is blocked by inhibiting meiosis.

14. (Original) The method of claim 10, wherein said infertility is caused by blocking oogenesis.

15. (Original) The method of claim 14, wherein said oogenesis is blocked by inhibiting meiosis.

16. (Original) The method of claims 13 or 15, wherein said meiosis is inhibited at prophase of meiosis I or later.

17. (Previously presented) The method of claim 10, wherein said agent is selected from the group consisting of: a nucleic acid construct, a small molecule antagonist of SMC1β, a peptidomimetic antagonist of SMC1β, and an anti-SMC1β antibody.

18. (Original) The method of claim 17, wherein the agent is administered in a composition comprising a pharmaceutically acceptable carrier.

19. (Original) The composition of claim 18, wherein the pharmaceutically acceptable carrier is an adjuvant, solubilizer, stabilizer, diluent, anti-oxidant, liposome, micelle, or patch.

20-28. (Canceled)

29. (Previously presented) The method of claim 18, wherein the agent is administered orally, parenterally, topically, transdermally, systemically, intravenously, intraarterially, intraperitoneally, or intramuscularly.

30. (Previously presented) The method of claim 12, wherein the administration is to the testis.

31. (Original) The method of claim 30, wherein the administration to the testis is by a route selected from the group consisting of: injection, implantation, and transdermal application.

32. (Previously presented) The method of claim 14, wherein the administration is to the ovary.

33. (Canceled)

34. (Previously presented) The method of claim 10, wherein the animal is human.

35. (Original) A method of inhibiting meiosis in germ cells, comprising inhibiting the expression or activity of SMC1β in said cells.

36. (Original) The method of claim 35, wherein said germ cells are spermatocytes.

37. (Original) The method of claim 35, wherein said germ cells are oocytes.

38. (Original) The method of claim 35, wherein said meiosis is inhibited at prophase of meiosis I.

39. (Original) The method of claim 38, wherein said cells are treated *in vitro*.

40. (Original) The method of claim 38, wherein said cells are treated *in vivo*.

41. (Original) The method of claim 38, wherein said cells are treated in an animal subject.

42. (Original) The method of claim 41, wherein said subject is human.

43. (Original) The method of claim 35, wherein said method comprises contacting said cells with an agent that reduces the expression or activity of SMC1β.

44. (Original) The method of claim 43, wherein said agent is a nucleic acid construct.

45-47. (Canceled)

48. (Previously presented) The method of claim 43 or 44, wherein the agent is administered in a composition comprising a pharmaceutically acceptable carrier.

49. (Original) The method of claim 48, wherein the pharmaceutically acceptable carrier is an adjuvant, solubilizer, stabilizer, diluent, anti-oxidant, liposome, micelle, or patch.

50-133. (Canceled)

134. (Previously presented) A method according to claim 1 or 10 substantially as described and illustrated herein.

135-138. (Canceled)

139. (New) A method of diagnosing a disorder or susceptibility to a disorder in an animal caused by or resulting from an abnormal level of SMC1β polypeptide or the nucleic acid encoding the polypeptide of SMC1β comprising:

a) determining the presence or amount of expression or activity of an SMC1β polypeptide or a nucleic acid encoding the polypeptide of SMC1β in a sample; and

b) comparing the level of SMC1β polypeptide or the nucleic acid encoding the polypeptide of SMC1β in a sample from normal animals or the animal at an earlier time, wherein the presence or susceptibility to the disorder is based on the presence or amount of SMC1β polypeptide or the presence or amount of expression of a nucleic acid encoding the polypeptide of SMC1β.

140. (New) A composition comprising exogenous SMC1β or an agent that induces SMC1β expression or activity and a pharmaceutically acceptable carrier.